

Amendments to the Specification:

Please add the following new paragraph after the title ending on line 2 of page 1:

CROSS REFERENCE TO RELATED APPLICATIONS

The present application is a divisional of USSN 09/592,347 that was filed on June 13, 2000.

Please replace the paragraphs beginning at page 8, lines 11-17, with the following amended paragraphs:

Figure 5 is a plan view of part of the fuel cell stack of Figures 1, 2, and 3;
and

~~Figures 6a, 6b and 6c are, respectively, planned, side and end views of a manifold for a catalytic hydrogen burner in accordance with the present invention; and~~

Figures 76, 87 and 98 are more detailed views of the embodiments of the fuel cell systems shown in Figures 1, 2 and 3 respectively.

Please replace the paragraphs beginning at page 8, lines 20-22, with the following amended paragraphs:

Referring first to Figures 1 and 76, the first embodiment of the apparatus is indicated generally by the reference 10 and includes an enclosure 12, in the apparatus. In the drawings, this is identified as a HyTef-FC15 enclosure.

Please replace the paragraphs beginning at page 10, lines 5-26, with the following amended paragraphs:

Thus, the embodiment of Figure 2, also shown in Figure 78, functions in much the same way as the embodiment of Figure 1. However, instead of having the

catalytic reactor 30 with an open surface reactor bed 32 with a large surface area, there is instead provided the enclosed tubular reactor 50. The reactor 50 has respective inlets 52 and 54 for fuel and air, and a tubular outlet 56. A flow of heated, humidified air 40 exits from the tubular outlet 56, and will then flow through the open fuel cell stack 14 as indicated, again, by arrows 29. ~~An air inlet 41 is connected to an air line 42, including air blower or pump 40.~~

A non-return valve 58 and a flash arrester 59 are provided, as for the next embodiment. Reference will now be made to Figures 3 and 87, which show a third embodiment of the present invention. This embodiment of the invention again can have an enclosure as indicated generally by the reference 60, and again includes a fuel cell stack 62. The stack 62 here is a closed stack, and is provided with an air pump or blower 64 connected by a main supply line 66 to an inlet of the fuel cell stack 62, and excess air exhausts from the fuel cell stack 62 as indicated at 68.

On the hydrogen side, a hydrogen supply line 70 can include a pressure gauge and a flow meter (not shown), and comprises a main hydrogen supply line 72 to the fuel cell stack 62 and a secondary supply line 74 to the catalytic burner or reactor 50. A solenoid valve 73 is provided in the main supply line 72, and a solenoid valve 75, a flash arrester 76 and a non-return valve 77 are provided in the secondary line 74. A fuel purge ~~valve line~~ 78 with a controlling solenoid valve 79 are provided as for the first embodiment.

Please replace the paragraphs beginning at page 11, lines 17-26, with the following amended paragraphs:

Correspondingly, to generate a heated hydrogen flow, the valve 88 is opened and the valve 89 closed. Then, excess hydrogen is supplied through the line 74, as compared to air supplied through the air supply line 80, ~~main fuel line 72~~. The flow is dead ended and is only exhausted during purging when the exhaust solenoid 79 is open. However, the flow can be controlled using control valves when not operated in dead-ended mode. In the tubular reactor 50, the oxygen in the air reacts with some of the hydrogen to generate heat and moisture. This leaves the flow of hydrogen, with

residual nitrogen, together with heat and moisture, to then exit from the outlet 56. This flow of heated and humidified nitrogen and hydrogen gas passes through valve 88 into the main fuel line 72.

Please replace the paragraph beginning at page 12, lines 1-8, with the following amended paragraph:

It is important that, in the reactor 50, complete reaction takes place. In other words, it is essential that, in the two modes of operation, residual hydrogen is not delivered to the main air line 66, nor residual oxygen delivered to the hydrogen supply line 72. This could result in potentially flammable gas mixtures of hydrogen and oxygen being delivered to the fuel cell stack ~~6260~~, which is dangerous. To ensure complete reaction, proper topology and morphology of the reactor must be designed, essentially to ensure adequate residency time over the full range of flow rates.